高职高专“十三五”规划教材

CHUANBO DIANZI DIANQI ZHUANYE YINGYU XIANGMUHUA JIAOCHENG

船舶电子电气专业英语

（项目化教程）

王欣　主编　管旭　王丽琴　副主编

化学工业出版社

高职高专“十三五”规划教材

船舶电子电气专业英语

（项目化教程）

王　欣　主编　管　旭 王丽琴　副主编

化学工业出版社

·北 京·

本书内容深入浅出，便于自学。全书共分 10 个单元（20 个学习任务）和 2 个实训环节，主要内容包括船舶电站、船舶电力拖动、船舶信号系统、船舶电气安装、船舶通信与导航、船电工程师文档写作，以及船舶电气设备名称、调试专业术语等。

本书在内容选编和结构安排上均有创新。书中内容节选自某造船企业的电气说明书和相关文档，这些内容都是企业工作岗位需要的；结构上以造船典型的工作任务为核心，结合船舶电气技术专业的特点，安排相关的教学与技能培养环节，重在培养学生阅读电气说明书等英文材料和口语交流职业能力。

本书是高职高专船舶电气类专业教材，也可供造船企业、船舶维修及船务公司等相关单位的工程技术人员阅读参考。

图书在版编目（CIP）数据

船舶电子电气专业英语（项目化教程）/王欣主编.
北京：化学工业出版社，2016.3
高职高专“十三五”规划教材
ISBN 978-7-122-26286-8

Ⅰ. ①船… Ⅱ. ①王… Ⅲ. ①船用电气设备-英语-高等职业教育-教材 Ⅳ. ①H31

中国版本图书馆 CIP 数据核字（2016）第 028696 号

责任编辑：王听讲　　装帧设计：韩　飞
责任校对：边　涛

出版发行：化学工业出版社（北京市东城区青年湖南街 13 号　邮政编码 100011）
印　　刷：北京永鑫印刷有限责任公司
装　　订：三河市宇新装订厂
787mm×1092mm　1/16　印张 13½　　字数 349 千字　　2016 年 5 月北京第 1 版第 1 次印刷

购书咨询：010-64518888（传真：010-64519686）　　售后服务：010-64518899
网　　址：http: // www. cip. com. cn
凡购买本书，如有缺损质量问题，本社销售中心负责调换。

定　　价：35.00 元

前　言

船舶电子电气专业英语是船舶电气类专业的一门专业必修课程，通过本课程的学习，学生将掌握船舶电气专业英语常用词汇、英文术语、缩写和特殊表达方式，并能阅读船舶电气设备英文操作面板及英文版操作手册；阅读、编写船舶电气设备订购单等船电生产管理中常用英文文件；学会造船和修船工作场所日常生活会话和日常业务会话方式和技巧，增强英语口语交流沟通能力。

本书是船舶电气类专业三年制高职或五年制高职教学教材。全书共分 10 个单元（20 个学习任务）和 2 个实训环节，主要内容包括船舶电气设备、船舶电站、船舶电力拖动、船舶信号系统、船舶电气安装、船舶通信与导航、船电工程师文档写作等内容。本书通过典型任务引领的项目活动，使学生具备从事本职业的高素质劳动者和高级技术应用型人才所必需的专业英语知识与技能。

本教材在内容编写和结构安排上力求有所创新。部分内容节选自某造船企业的英文电气说明书和相关文档，重点突出，难度适中，教材的内容都是企业工作岗位需求的；编写方法上以具体的工作任务为核心，结合船舶电气技术专业的特点安排相关的教学与技能培养环节，突出培养学生阅读电气说明书等英文材料和口语交流等相关的职业能力。

我们将为教师提供电子版的《教师参考书》，以及每个单元的教案、练习题答案和课文参考译文。我们还将为使用本书的教师免费提供电子教案等教学资源，需要者可以到化学工业出版社教学资源网站 http://www.cipedu.com.cn 免费下载使用。

本教材由渤海船舶职业学院电气工程系王欣担任主编，管旭和王丽琴担任副主编。王欣负责编写第 1、4、6、9 单元以及实训 1 和实训 2；管旭负责编写第 2、8、10 单元和语法部分；王丽琴负责编写第 3、5、7 单元；渤海船舶重工孙睿也参与了本教材的设计和编写工作。

本书的编写得到了渤海船舶职业学院教务处，特别是电气工程系各位同仁的支持与帮助，以及骨干校建设项目“电气工程系课程建设项目”的支持，在此表示由衷的感谢。

在本书的编写过程中，我们得到了大连中远、舟山中远造船企业、金陵造船厂及渤海船舶重工等单位多位同志的大力支持和帮助，在此一并致以衷心的感谢。

由于编者水平有限和时间仓促，疏漏之处在所难免，恳请广大同仁批评斧正。

编　者

2016 年 1 月

Contents

Unit 7 Marine Communication and Navigation System

Unit 8 Marine Electrical Maintenance and Trouble Shooting

Unit 9 Marine Electrical Test

Unit 10 Lists and Documents for Electrical Engineer's Profession

Practical Training 1

Practical Training 2

Unit 1

Ship's Bridge and Engine Control Room

【Unit Goals】

1. Get to know the function of ship's bridge and engine control room; Be familiar with the electrical equipment equipment in ship's bridge and engine control room: chronometer, compass, gyroscope, main switchboard(MSB), emergency switchboard(ESB) etc.

2. Students can introduce ship's bridge and engine control room to others in English.They can talk to each other about ship's bridge and engine control room fluently.

Task 1　Ship's Bridge

【Task goals】

1. Get to know the function of ship's bridge. Be familiar with the electrical equipment in ship's bridge: telegraph, steering wheel, tachometer, compass etc.

2. Students can introduce the marine electrical equipment in bridge to others in English and talk to each other about equipment fluently.

【Knowledge linking】

What do ship's bridge include in your mind?

Please look at the following pictures carefully and try to learn the terms.

(1) Ship's bridge (Fig. 1-1)

(2) Bridge control console (BCC) (Fig. 1-2)

Ship's Bridge

The bridge is also called the "wheelhouse". The bridge or the wheelhouse is headquarter of a ship, where much of the ship's navigational equipment and meters for maneuvering the ship are installed, for example: telegraph, radar, steering wheel, tachometer and so on, It can be said that the bridge is the command center on board.(1)

Fig.1-1 Ship's bridge

Fig. 1-2 Bridge control console (BCC)

When the ship is underway(航行中), the bridge, from which the navigation and control of the ship is exercised, is the control center for all operations.The officers, the helmsman, and the quartermaster of the watch stand their watches here.

The bridge includes the pilothouse or wheelhouse so called, because it contains the ship's steering wheel, and the charthouse where the navigator and his staff chart the course of the ship. Due to their responsibilities, both the captain and the navigator are required to be in this area frequency when the ship is at sea. The charthouse is a part of the bridge. The ship's course or route is laid out here on large nautical charts. The ship's position is frequently determined and plotted on the chart.(2) The stacks of drawers contain nautical charts for various areas of the entire world. The official ship's logbook is also put here. And on the bulkhead are the radio direction finder, a pair of global positioning system receivers, a NAVTEX receiver and a loran-C receiver. All of the units are used to help establish the ship's position (Fig. 1-3).(3)

(a) Charthouse (b) Radio room

Fig.1-3 Charthouse and radio room

The outside platforms, called the bridge wings, permit greater overall visibility for the officers than the pilothouse, which simply looks forward. The navigator and quartermaster also take visual readings from the wings using gyrocompass bearings to known objects or sextant elevations to the stars, planets and sun to determine the ship's position. At sea during hours of darkness, the lookout stands his watch in this area, scanning the horizon for other ships or hazards to navigation. When he stops something unusual, he reports the information to the mate on watch, who is the officer in charge of safely navigating the ship. The mate reports to the captain or master who is the ultimate authority and responsible for the overall operation of the ship.

【New Words and Expressions】

wheelhouse	[ˈwiːlhaʊs]	n.	驾驶室，操舵室
bridge	[brɪdʒ]	n.	驾驶室，桥楼
telegraph	[ˈtelɪgrɑːf]	n.	电报
bulkhead	[ˈbʌlkhed]	n.	隔离壁,堵墙,岸壁
charthouse	[ˈtʃɑːtɪhaus]	n.	海图室
fathometer	[fæˈðɒmɪtə]	n.	回声探测仪
gyrocompass	[ˈdʒaɪərəʊˌkʌmpəs]	n.	陀螺罗经,电罗经
gyroscope	[ˈdʒaɪrəskəʊp]	n.	陀螺仪

helmsman	['helmzmən]	n.	舵手
landmark	['lændmɑːk]	n.	[航]陆标
pilothouse	['paɪlətˌhaʊs]	n.	操舵室
quartermaster	['kwɔːtəmɑːstə(r)]	n.	舵手
steering	['stɪərɪŋ]	n.	转向装置；掌舵；操作；指导
steering wheel			方向盘；驾驶盘
steering gear			操舵装置，舵机，
platform	['plætfɔːm]	n.	台；站台；平台；
tachometer	[tæ'kɒmɪtə]	n	转速计；测速计；旋速计；速度计
bridge wings			驾驶台两侧的翼台
port bridge wing			左翼（PORT WING）
starboard bridge wing			右翼(经常缩写为 STBD. WING)
(bridge control console)BCC			驾控台
Global Positioning System(GPS) Receiver			全球定位系统接收机
Loran-C receiver			罗兰 C，接收机
NAVTEX			航行警告电传系统

【Notes】

(1) The bridge or the wheelhouse is headquarter of a ship, where much of the ship's navigational equipment and meters for maneuvering the ship are installed,for example: telegraph,radar, steering wheel,tachometer and so on, It can be said that the bridge is the command center on board.

驾驶室是一艘船舶的指挥总部，里面装备一艘船舶大多数的导航设备和驾驶船舶的各种仪表，如电报，雷达，舵机，测深仪等，它是一艘船舶的命令指挥中心。

注意：对专业英语翻译要求有三个层次，即信、达、雅。所谓“信”，是指翻译要忠实原文；所谓“达”，是指翻译通顺。所谓“雅”，要求翻译在修辞上加以润色，这要求翻译人员有较高的中文造诣。专业英语的句子一般都比较长，会有一些从句，翻译的时候可以按照两个步骤进行：先直译，后按照中文的习惯（中文句子一般是：时间、地点、人物、事件）调整语序。本句中就有 where 引导的从句。

(2) The chartroom is a part of the bridge. The ship's course or route is laid out here on large nautical charts. The ship's position is frequently determined and plotted on the chart.

海图室是驾驶室的一部分。大的航海图，可以显示船舶的航程和航线。在海图上通常可以确定和绘制船舶的位置。

lay out　设计；展示；安排

(3) And on the bulkhead are the radio direction finder, a pair of global positioning system receivers, a NAVTEX receiver and a Loran-C receiver. All of the units are used to help establish the ship's position.

隔壁是无线电测向仪、双套 GPS 接收、一台航行警告电传系统和双曲线无线电导航系统接收机。所有这些设备用来帮助确定船舶位置。

【Task Implement】

PART A Reading Practice

Navigation equipment(Table 1−1)

(SELECTED FROM ELECTRICAL SPECIFICATION FOR 165,000 DWT CRUDE OIL TANKER)

Table 1-1 Navigation equipment

No.	Name	Number
1	gyro compass/ autopilot	One (1) set of gyro compass shall be installed in wheelhouse.
2	magnetic compass	One (1) set of reflect type magnetic standard compass of 165mm card dia(卡径), shall be installed on the compass deck(罗经甲板), and the repeater shall be extended through the deck to the Wheel House.(1) One (1) set of spare（备用） compass bowl shall be provided in the wooden storage box. Magnetic compass shall be adjusted at sea trials（航海试验）. One (1) piece of azimuth（航向）signal shall be provided with the gyro compass & auto pilot.
3.	echo sounder	One (1) set of echo sounder with shallow water alarm shall be installed, it's transducer shall be installed at bottom on forward.(2) One (1) recorder shall be installed in wheel house. One (1) set of digital depth indicator shall be provided on measuring instrument panel. The shallow water alarm shall be provided.
4.	speed log	One (1) set of two axial Doppler speed log shall be installed in the wheel house and equipped with distance and speed indication. One (1) repeater shall be installed in engine room control console. One (1) speed indicator with a dimmer shall be installed in wheelhouse. One (1) transducer shall be installed on forward.
5.	radar plant	Two (2) sets of raster scan type marine radar shall be provided
6.	horn	One (1) set of air horn on the radar mast（雷达桅）and one (1) set of electric horn on the foremast shall be provided.(3) One (1) set of horn controller shall be fitted on bridge control console and shall be capable of operating horns and providing automatic for signaling. Each one (1) set of push button shall be provided in the wheelhouse and both bridge wings. The equipment shall be fed from emergency supply system. The horn light shall be commonly used with morse signal light.
7.	weather facsimile receiver	One (1) set of weather facsimile recorder shall be provided in the chart space and a whip antenna（鞭状天线） on the wheelhouse top.
8.	NAVTEX receiver	One (1) set of 518 kHz NAVTEX receiver with printer shall be installed in wheel house.(4)
9.	anemometer and anemoscope	One (1) set of anemometer for continuous measurement of wind speed and wind direction with illumination shall be provided. A combined anemometer transmitter shall be installed at radar mast.
10.	DGPS	Two (2) set of DGPS satellite navigator shall be provided in wheelhouse and antenna on the radar mast.
11.	window wiper	Five (5) sets of window wipers with glass heater shall be provided, the controller to be installed on wheelhouse console

【New Words and Expressions】

autopilot	['ɔːtoʊpaɪlət]	n.	自动驾驶仪
echo	['ekoʊ]	n.	回声
echo sounder			回声测深仪
transducer	[trænz'duːsər]	n.	传感器
facsimile	[fæk'sɪməli]	n.	传真
anemometer	[ænɪ'mɑːmɪtə(r)]	n.	风速计
anemoscope	[əne'məskoʊp]	n.	风速计
horn	[hɔːn]	n.	号角，喇叭
transmitter	[træns'mɪtə, trænz-]	n.	发射机 发报机
receiver	[rɪ'sivə]	n.	接收器 无线电接收机
repeater	[rɪ'pitə]	n.	复示器

【Notes】

(1) One (1) set of reflect type magnetic standard compass of 165mm card dia, shall be installed on the compass deck（罗经甲板）, and the repeater shall be extended through the deck to the Wheel House.

罗经甲板上安装一台反映式 165mm 卡径标准磁罗经，能将罗经卡读数投射到驾驶室内。

(2) One (1) set of echo sounder with shallow water alarm shall be installed, it's transducer shall be installed at bottom on forward.

安装一台带有浅水报警的回声测深仪，它的传感器安装在船舶的前方底部。

(3) One (1) set of air horn on the radar mast（雷达桅）and one (1) set of electric horn on the foremast shall be provided.

在雷达桅装汽笛，前桅上装备电笛。

(4) One (1) set of 518 kHz NAVTEX receiver with printer shall be installed in wheel house.

驾驶室装备一台 518kHz 带有打印机的航行警告电传接收机。

PART B Role Playing

Visit the Bridge

(A: cadet who comes on board for the first time; B: captain)

A: What is this one?

B: It is a gyroscope. The instrument provides an accurate indication of the ship's heading, or direction.

A: What is that on the bulkhead?

B: That is a recording fathometer. It displays and records the distance from the bottom of the ship to the ocean floor.

A: Is this the recorder?

B: You are right. It can plot the steering direction, the wind direction.

A: Where is the chronometer?

B: It is inside the glass case on the left end of the chart table.

A: It must be used together with a sextant and nautical almanac to calculate the position by

observing stars and the sun.

B: Very correct.

【Task Evaluation】

(一) Choice

1. What is also called the wheelhouse?

A.chartroom B.bridge C.the console

2. Gyro,called gyroscope,provides_____.

A.the distance from the bottom of the ship to the ocean floor

B.the wind direction

C.an accurate indication of the ship's direction.

3. What is the commanding center on board?

A.the wheelhouse B.bridge wing C.engine control room

4. Where much of the ship's navigational equipment and meters for maneuvering the ship are installed?

bridge wing B.the wheelhouse C.engine control room

5. What called the bridge wings?

A.upper deck B.the outside platforms C.engine control room

(二) Translation.

1. Translate new words and expressions into Chinese (Table 1-2).

Table 1-2 Translation

1.gyro compass	
2.magnetic compass	
3.echo sounder	
4.speed log	
5.radar plant	
6.fog horn	
7.weather facsimile receiver	
8.NAVTEX receiver	
9.anemometer and anemoscope	
10.GPS	
11.BCC	
12.autopilot	
13.charthouse	
14.bridge/wheelhouse	
15.port wing	

A. 回声测深仪；B. 电罗经、陀螺罗经；C. 磁罗经；D. 计程仪；E. 雾号；F. 气象传真机；G. 操舵仪；H. 全球定位系统；I. 航行警告电传系统；J. 驾控台；K. 海图室；L. 集控台；M. 驾驶室；N. 驾驶室左翼；O. 风速计。

2. Translate the following sentences into Chinese.

The bridge includes the pilothouse or wheelhouse so called, because it contains the ship's steering wheel, and the charthouse where the navigator and his staff chart the course of the ship. Due to their responsibilities, both the captain and the navigator are required to be in this area frequency when the ship is at sea. The chartroom is a part of the bridge. The ship's course or route is laid out here on large nautical charts. The ship's position is frequently determined and plotted on the chart.The stacks of drawers contain nautical charts for various areas of the entire world. The official ship's logbook is also put here. And on the bulkhead are the radio direction finder, a pair of global positioning system receivers, a NAVTEX receiver and a loran-C receiver. All of the units are used to help establish the ship's position.

(三) Speaking Practice

1. Group discussion

Work in groups. Look at the statements in the language bank task. Which of them are important aspects for general-cargo ships and container ships respectively? Why?

2. Short talk

Now it is your chance to practice what you have learned from this unit. Put your textbook away and give a short talk on the following topics. You should talk at least one minute. Don't be discouraged if you cannot make it. Review the lesson and try again. You are sure to do it better next time.

• bridge on the ship

3. Role playing

Work in groups or pairs and discuss the following topics. Then, you are advised to talk at least three minutes for each topic.

- A is a cadet visiting the ship. B is the captain.
- Prompts: Introducing the bridge control console.
- Bridge (its function and related equipment).

Task 2 Engine Control Room

【Task goals】

1. Get to know engine control room. Be familiar with the marine electrical equipment in ECR: main switchboard(MSB),emergency switchboard(ESM) etc.

2. Students can introduce the marine electrical equipment in engine control room to others in English and talk to each other about equipment fluently.

【Knowledge linking】

What do ship's engine control room(ECR) include in your mind?

Please look at the following pictures carefully and try to learn the terms：

(1) Engine control room(ECR) (Fig.1-4)

Fig.1-4 Engine control room(ECR)

(2) Engine control console(ECC) (Fig.1-5)

Fig.1-5 Engine control console(ECC)

Engine Control Room(ECR)

The engine control room(ECR) is the workplace for marine engine operation and is equipped with appropriate equipment, many control panels, indicators, buttons are distributed over consoles and switch cabinets in such a way that all essential conditions of the main propulsion unit can be observed and controlled at the same time.[(1)] The main engine control station is the central point for main engine and auxiliary diesel generators, shaft generator, turbo generator, emergency diesel generator and the main switch cabinet are lined up face-to-face with the main engine control station. The engine diagnosis system permits a display of the cylinder and injection pressure curves and rotational uniformity and with the values obtained, and it is possible to visualize the engine status. Moreover,

there is a ship's control console serving as secondary control and monitoring station and allowing remote control of ship speed and direction in emergency situations.

The engine control room is the place where engine control room crews carry out instructions from the bridge by means of operating the various kind of machinery equipment.(2) Good cooperation between the bridge and engine control room is key for the ship's sailing at sea. With the rapid development of technology, Unattended Machinery Space（UMS） appears. That is to say, no one needs to work in the engine control room and the ship can be remotely controlled from the bridge.We are sure that the great change will certainly take place in the future.

【New Words and Expressions】

Engine Control Room(ECR)			集控室
Engine Control Console(ECC)			集控台
switch	[swɪtʃ]	n. & v.	开关 转换
propulsion	[prəˈpʌlʃən]	n.	推进 推进力
engine	[ˈɛndʒɪn]	n.	发动机，引擎
main engine(ME)		n.	主机
generator	[ˈdʒɛnəˌreitə˞]	n.	发电机
diesel generator(D.G)			柴油发动机
shaft generator			轴带发电机
turbo generator			涡轮发电机
Unattended Machinery Space（UMS）			无人机舱

【Notes】

(1) The engine control room(ECR) is the workplace for marine engine operation and is equipped with appropriate equipment, many control panels, indicators, buttons are distributed over consoles and switch cabinets in such a way that all essential conditions of the main propulsion unit can be observed and controlled at the same time.

集控室是操纵船机的工作场所，这里有适当的设备、许多控制屏、指示器、按钮安装在控制台上，能够通过配电盘同时去观测和控制主推进单元的基本参数。

(2) The engine control room is the place where engine control room crews carry out instructions from the bridge by means of operating the various kind of machinery equipment.

集控室是这样的地方，它里面的船员通过操作各种机器设备执行从驾驶室发出的指令。

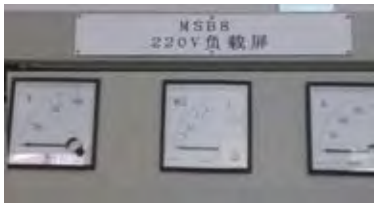
【Task Implement】

PART A Reading Practice

Switchboard in ECR(Table 1−3)

(SELECTED FROM ELECTRICAL SPECIFICATION FOR 165,000 DWT CRUDE OIL TANKER)

Table 1-3 Switchboard in ECR

<table>
<tr><th>No.</th><th>Name</th><th>Number</th></tr>
<tr><td rowspan="4">1.</td><td rowspan="4">Main Switchboard (MSB)</td><td>The main switchboard shall be installed in the engine control room and consist of following panels:
Panel Arrangement
The main switchboard shall be installed in the engine control room and consist of following panels:
No.1 group starter panel
No.1 440V feeder panel
No.1 diesel generator panel
Synchronizing panel
No.2 diesel generator panel
No.3 diesel generator panel
No.2 440V feeder panel
No.2 group starter panel
220V feeder panel</td></tr>
<tr><td> 
Generator Panel
 
Shaft Generator Panel</td></tr>
<tr><td> 
400 Volt Feeder Panel
 
Group Starter Pane</td></tr>
<tr><td> 
220V Feeder Panel
 
Synchronizing Panel</td></tr>
<tr><td>2.</td><td>Emergency Switchboard (ESB)</td><td>The emergency switchboard shall consist of one emergency generator panel,one AC 440V feeder panel and one 220V feeder panel. The emergency switchboard shall be installed in the emergency generator room.(1)
An emergency diesel generator engine automatic start device shall be installed in the emergency generator room, but not in the emergency switchboard.</td></tr>
<tr><td>3.</td><td>Shore Connection</td><td>One (1) set of shore connection for receiving AC 440V volts, 400 amperes, 3 phase, 60Hz, shore source shall be provided with three (3) pole moulded case type circuit breaker and phase sequence indicator that shall be installed in the ESB.</td></tr>
</table>